



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,024	04/20/2004	Aaron Ferrucci	ALTRP112/A1251	5974
51501 7590 03/12/2007 BEYER WEAVER & THOMAS, LLP ATTN: ALTERA P.O. BOX 70250 OAKLAND, CA 94612-0250			EXAMINER KERVEROS, JAMES C	
			ART UNIT	PAPER NUMBER
			2138	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/829,024

Applicant(s)

FERRUCCI ET AL.

Examiner

JAMES C. KERVEROS

Art Unit

2138

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 16-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This is a Non-Final Action in response to Amendment filed 2/1/2007.

Claim 15 is cancelled. Claims 1-14 and 16-30 are presently under examination and pending.

Response to Arguments

Applicant's arguments, see Amendment filed 2/1/2007, with respect to the rejection of claims 1-3, 5-12, 21-24, 26-30 under 35 U.S.C. 102(b) as being anticipated by Meizlik et al. and claims 13, 14, 17-20 under 35 U.S.C. 103(a) as being unpatentable over Meizlik et al., have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

In response to Applicant's arguments, the Examiner concedes that Meizlik does not teach or suggest arbitration logic, a primary component and a secondary component, as recited in independent claims 1, 21, and 28 or an interconnection module, a primary component, and a secondary component as recited in independent claim 13.

However, under new grounds of rejections, Normoyle (US Patent 5,892,957) discloses primary components (master devices M1, M3..M3), secondary components (slave devices S1. . . S2) and arbitration logic (a system controller 75) coupling the master devices with the slave devices, Fig. 1A. Regarding Claim 13, the system controller of Normoyle, also, functions as an interconnection module, for communicating asynchronous interrupt events as from interrupting sources to interrupt handler targets across a packet-switched interconnection network.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-14 and 16-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Normoyle (US Patent 5,892,957) issued: April 6, 1999.

Regarding independent Claims 1, 13, 21, 28, Normoyle discloses a method and apparatus directed to interrupt handling in a uniprocessor or multiprocessor system, including multiple master devices (M1, M3..M3) and slave devices (S1 . . . S2), which are coupled via a system controller 75, Fig. 1A, in the same fashion as the system controller 70 is coupled to the master and slave(s) in Fig. 1, where the master devices correspond to the primary components, the slave devices correspond to the secondary components and the system controller 75 correspond to the arbitration logic, also shown in Figs. 9 and 10, the method and apparatus comprising:

Receiving a request (P_INT_REQ) at a secondary component (device 1070) coupled to a primary component (device 1060) through arbitration logic (system controller), where the request is characteristic of a primary component request (P_INT_REQ), flow chart of Fig. 10, which illustrates the method carried out in connection with the apparatus of Fig. 9, as follows:

An interrupt event begins with the issuance of an interrupt request (P_INT_REQ) by the master, as at step (box) 1500 in Fig. 10. The system controller (SC) receives the INT request (box 1510), and determines (box 1520) from field 1010 (target ID) the appropriate target for the interrupt. This is done by SC logic 1430, i.e. circuitry and/or software configured in a conventional manner for this purpose.

At box 1530, the SC 1180 determines by examining its counter 1460 whether the slave interface 1290 can accept an INT request.

If at box 1530 the target is unable to receive the pending INT request, then the method proceeds to step 1640. In this case, the SC issues a negative acknowledgment (commonly called a NACK, and identified in FIGS. 9 and 10 as S--INAK) to the master, and the SC drops the P--INT--REQ without passing it on to the slave. At step 1650, the master waits a random (or pseudorandom) period of time, and then proceeds to step 1500 to reissue the INT request.

Regarding Claim 13, the system controller of Normoyle, also, functions as an interconnection module, for communicating asynchronous interrupt events as from interrupting sources to interrupt handler targets across a packet-switched interconnection network. According to Normoyle, "the interconnection network may in general take the form of a number of different standard communication topologies that interconnect masters and slaves, such as a point-to-point link, a single bus or multiple buses, or switching fabrics. The interconnect may employ any of a number of conventional mechanisms for switching the transaction request to a slave using one or more signal paths, and the switching may be based either on the addressing information

Art Unit: 2138

contained in the transaction request packet, or on another protocol not necessarily dependent on the contents of the request packet”.

Regarding Claims 2, 3, 5, 6, 8-12, 14, 17, 19, 20, 22-24, 26, 27, 29, 30, Normoyle discloses the randomness of the period of time that the master waits before resending an INT request helps to prevent situations where a given interrupter repeatedly sends interrupts to another device, preventing the receiving device from sending its own interrupts, by causing it to delay its own interrupts to process incoming interrupts from the first interrupter. In this application, "random" may be taken to mean, truly random or pseudorandom, i.e. random with certain predetermined constraints. Thus, the interrupter is caused to delay some random period of time, and in that period the second device gets a chance to clear the outstanding interrupt(s) and issue its own interrupt request.

Regarding Claim 7, with respect to claimed limitation “switching fabric”, Normoyle discloses the interconnection network may in general take the form of a number of different standard communication topologies that interconnect masters and slaves, such as a point-to-point link, a single bus or multiple buses, or switching fabrics.

Regarding Claim 18, Normoyle discloses the system controller (SC) 1180 includes a counter 1420 for monitoring the number of transactions pending at an associated slave's input queue and a 1460 for monitoring the number of outstanding interrupt requests to the slave interface 1290. At step 1650, the master waits a random (or pseudorandom) period of time, then proceeds to step 1500 to reissue the INT request, 2 where the waiting time period may be implemented with the a counter.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Regarding Claims 4, 16, 25, Normoyle does not explicitly disclose a Linear Feed Back Shift register (LFSR) as delay mechanism.

However, in analogous art, Malek (US 5,086,467) discloses a secure communication system including a pseudo-random sequence itself, which is ideally suited for determining both the duration and the inter-transmission delays by using the output of the LFSR to seed random variable generators, one of which may be used to select the duration of any dummy traffic transmission, and the other of which may be used to determine the inter-transmission delay, or time between transmissions, (see Malek, Summary of the Invention and Figure 3). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate an LFSR in the apparatus of Normoyle as taught by Malek, for the purpose of generating a pseudo-random delay, since an LFSR is ideally suited for determining time delays.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES C. KERVEROS whose telephone number is (571) 272-3824. The examiner can normally be reached on 9:00 AM TO 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

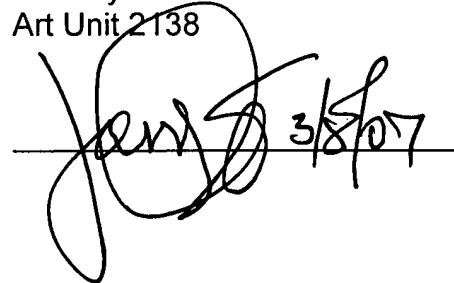
Art Unit: 2138

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Date: 8 March 2007
Office Action: Non-Final Rejection

U.S. Patent and Trademark Office
Alexandria, VA 22314
Tel: (571) 272-3824, Fax: (571) 273-3824
james.kerveros@uspto.gov

JAMES C KERVEROS
Primary Examiner
Art Unit 2138

A handwritten signature in black ink, appearing to read 'James C. Kerveros', is written over a horizontal line. To the right of the signature, the date '3/8/07' is handwritten.